

ABSTRACT OF THE DISCLOSURE

The disclosure is directed toward an optical excitation/detection device that includes an arrayed plurality of photodetectors and discrete photoemitters, as well as a method for making such a device. A CMOS fabricated photodetector array includes an arrayed plurality of photoreceptor areas and photoemitter areas, wherein each photoreceptor area includes a CMOS integrated photoreceptor and each photoemitter area includes at least two buried electric contact pads. The CMOS array is selectively etched back at the locations of the photoemitter areas for regions to reveal the buried contact pads. A plurality of discrete semiconductor photoemitter devices (such as, for example, light emitting diodes) are inserted into, and mechanically retained within, the regions of the CMOS fabricated photodetector array. The inserted discrete semiconductor photoemitter devices make electrical contact with the buried electric contact pads that are revealed within each of the regions to form the optical excitation/detection device from an arrayed plurality of photodetectors and discrete semiconductor photoemitters.